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NATURAL HISTORY.

# Lincolnshire Naturalists' Union Transactions.

1922.

*Edited by*
*ARTHUR SMITH,*
*F.L.S., F.R.Met. S., F.E.S.,*
AND
*R. W. GOULDING,*
*F.S.A.*

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# Lincolnshire Naturalists' Union.

*Founded June 12th, 1893.*

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# LINCOLNSHIRE NATURALISTS' UNION.

## *Statement of Account from 1st January to 31st December, 1922.*

| RECEIPTS. | | | £ | s. | d. |
|---|---|---|---|---|---|
| By Balance in Bank, 31st Dec., 1921 | | | 12 | 5 | 1 |
| ,, Balance due from Secretary | | | 0 | 9 | 11 |
| ,, Life Members' Donations invested in Savings' Bank | 60 | 9 9 | | | |
| Interest thereon | 1 | 9 0 | | | |
| | | | 61 | 18 | 9 |
| ,, Members' Subscriptions | | | 28 | 16 | 0 |
| ,, Copies of Transactions sold | | | 3 | 10 | 0 |
| ,, Cheque omitted, due to Treasurer | | | 0 | 17 | 4 |
| ,, Unpresented Cheque | | | 0 | 15 | 9 |
| | | £ | 108 | 12 | 10 |

| PAYMENTS. | | | £ | s. | d. |
|---|---|---|---|---|---|
| To Subscriptions to the 'Naturalist' | | | 0 | 10 | 6 |
| ,, Treasurer, Expenses omitted, 1921 | | | 0 | 10 | 9 |
| ,, Printing and Stationery | | | 2 | 5 | 11 |
| ,, Printing Transactions, 1921, and Block for Illustration | | | 19 | 14 | 0 |
| ,, Postage and Stamps | | | 4 | 16 | 1 |
| ,, Expenses of Meetings | | | 1 | 6 | 6 |
| ,, Life Members' Donations in Savings' Bank | 60 | 9 9 | | | |
| Interest | 1 | 9 0 | | | |
| | | | 61 | 18 | 9 |
| ,, Balance in Bank | 16 | 19 7 | | | |
| Due from Secretary | 0 | 10 9 | | | |
| | | | 17 | 10 | 4 |
| | | £ | 108 | 12 | 10 |

5th February, 1923. Examined and found correct,

J. S. SNEATH, *Treasurer.* PERCY A. LANE, *Auditor.*

# PRESIDENTIAL ADDRESS

TO THE

# LINCOLNSHIRE NATURALISTS' UNION,

delivered at Lincoln, 27th November, 1922,

by the Rev. Canon A. N. Claye, M.A., D.D.

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## SOME ŒCOLOGICAL FEATURES & PROBLEMS IN PLANT LIFE.

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I should imagine that no one occupying this post in the past felt the *nolo praesidere* more strongly than the present occupant, or knew himself more unworthy to fill it. But I have always acted on the principle that others are better judges of fitness than the person who occupies the office, and therefore I thank the members of the Union for thinking me worthy to fill the post which has been filled by so many worthier and more scientific naturalists in the past. I look upon it as a great honour, and now that I am leaving Lincolnshire for my native county, I may perhaps credit you with prophetic vision, and thank you for so kindly giving me this pleasure and privilege which, had I been staying here, I ought not to have had for some years to come, when, let us hope, I shall not only be older, but wiser.

Being a field botanist, and among the number of those who have taken to the study somewhat late in life, I have not the rich experience from which to draw inferences and conclusions which may be helpful to others. So I am thrown upon the results attained by others, and aided by them I will try to point out several ways in which we may study the science of which I am a humble follower.

The field botanist, when first he is smitten with the desire to know more, finds himself 'up against' the difficult problem of learning what is almost a new language. He has this in

common with all scientific workers. Take a sentence haphazard out of a standard work:

> 'Heterotrophic growth-forms are shown by all holosaprophytes and holoparasites, which are undoubtedly derived from autophytes, and are degenerate in form and structure. Hemisaprophytes and hemiparasites, on the contrary, are under the dominance of chlorophyll, and exhibit the same rich diversity of form as other green plants'.

This language may be necessary for the interplay of great scientific minds which can force their way airily through such tangles, like elephants through the jungle, but they are a serious problem to those whose knowledge of the classical languages is meagre. The practice may be indulged in to such an extent as to lead to forgetfulness to speak in plain English. Why, for example, should one say *etiolated* when one simply means *pale*? The ordinary student may be thankful that there are some who can translate these sesquipedalian words into crisp and plain unscientific English.

But this is a difficulty to be mastered in the study of Œcologic Botany. The object of Œcologic Plant-Geography, to give it its scientific title, is thus stated: it teaches us how plants, or plant communities, adjust their forms and modes of behaviour to actually operating factors, such as the amounts of available water, heat, light, nutriment, and so forth. A casual glance shows that species by no means dispose their individuals uniformly over the whole area in which they occur, but group them into communities of very varied physiognomy. Œcology seeks

(i) to find out which species are commonly associated together upon similar habitats (stations)—an easy task which merely involves the determination or description of a series of facts;

(ii) to sketch the physiognomy of the vegetation and the landscape—an operation that is not difficult;

(iii) to answer these questions: (a) why each species has its own special habit and habitat; (b) why the species congregate to form definite communities; and (c) why these have a

characteristic physiognomy. This is a far more difficult matter, and it leads us

(iv) to investigate the problems concerning the economy of plants, the demands that they make on their environment, and the means that they employ to utilise the surrounding conditions, and to adapt their external and internal structure and general form for the purpose.

We thus come to the growth-forms of plants. This is a very wide and comprehensive study, and would occupy many scientific workers for many generations. The field botanist may expend his energy and find his chief happiness in working at the easier task suggested by heads i and ii; but he cannot help being interested in, and trying to understand something of the vast problems suggested by heads iii and iv.

He sees how the science of plants is linked with other sciences, and how one is necessary to and completes another. Thus he finds that knowledge of Geology, Biology, Chemistry, Zoology, does not come amiss, but indeed is very helpful to the worker in the botanical field. A single person is apt to grow bewildered with the multitude of the problems that arise. As I am a simple and unscientific person, I will try to suggest what I and others like me can and should do to improve our knowledge.

I suppose we all begin this kind of study when we notice for the first time that the flora on some special kind of soil differs from that on another kind; or that certain plants grow, or attain their optimum of growth, on certain soils. Again, we make a further discovery, when we find that this is not an accidental collocation, but that wherever the same soil is present, the same, or much the same, flora is reproduced.

The reasons for this may carry us back into the dim ages of geological periods. And this subject impinges upon another side of plant-geography, scientifically called floristic, with which we have nothing to do on this occasion. But the two sides of plant-geography cannot be studied in entire independence of each other. It is, for instance, helpful and necessary to study the geological map as a preliminary to the examination of the flora of a particular spot.

Let me suggest two lines on which it is possible to proceed:

(1) We may study the relations of the plant with one or more of its environing conditions, e.g. its adaptation to the amount of light and heat, or air or water in the soil, the effect of a living covering on the vegetation, or of a non-living covering, such as snow, which is called the poor man's manure. In the same connection we may search out and observe the way in which insects, animals and plants serve one another, and the part which insects play in the preparation of the soil, and therefore of the food which is to form the sustenance of vegetable life. Or,

(2) we may study plant-life (a) in combination, or (b) as a community, i.e. either where two species are closely linked together, or where many species feed, so to speak, at the same table.

Under the heading (a) comes parasitism, where one species feeds on the other. The parasite lives on its host, at the expense of its living tissue, and of this certain species of *Cuscuta* (Dodder) may be taken as examples.

Under the same heading comes helotism, where one species is in a condition of slavery to the other, this being the relation of certain algæ to fungi.

Other forms of combination are Mycorhiza, Endophytes, Epiphytes, Saprophytes and Lianes, with all their varied devices of twining and climbing to support themselves, and to reach the desired light.

Under the heading (b) come plants which live in community, i.e. when they share with one another the supply of food-material contained in soil or air, and thus feed at the same table.

The simplest association is that of members of one species, such as Beech or Ling, which make the same demands, and among which the struggle for existence is keenest. Doubtless it has its advantages, as in the opportunity it affords for the

fertilisation and ripening of seeds; but, as in all communities where many individuals live close together, there are dangers of waste and disease.

But a community of plants rarely consists absolutely of one species. In general, many species grow side by side, and form either mutually helpful combinations, or keenly competitive groups. There is, for example, the combination where plants feed at the same table, but on different fare. Thus, many spring plants will have withered before the summer plants have developed. There are also complementary associations of plants, where a number of species live together in harmony because their roots lie at different depths in the soil. At the opposite extreme lie the competitive associations of species which are engaged in internecine warfare. Some plants then combine for protection and mutual service, while others are declared enemies. In using this manner of speaking and writing, it is necessary perhaps to say that though there is a resemblance between the communities of plants, and those of human beings and other animals in the competition for food which takes place, and causes the weaker to degenerate and perhaps vanish, yet in the plant community there is no co-operation for the common good. It is only in a loose sense that we can speak of certain individuals protecting others. To say that 'in the plant community egoism reigns supreme' is to use a lax form of expression. However, we do not find in the plant community such combination as a learned writer has lately recorded of a community of ants which cultivate their own mushrooms.

These plant communities then present varied problems. They are scarcely ever sharply marked off from one another; and, again, the same species often occur in several widely different surroundings.

The difficulties are clearly stated by Professor Warming, who writes: 'These circumstances render very difficult the correct scientific interpretation, delimitation, diagnosis and systematic classification of plant communities, especially when

we consider the condition of our present knowledge, for we have only just commenced to investigate growth-forms and communities, and what we do not know is infinite. Another difficulty, to which allusion has already been made, is to assign suitable names to the more or less comprehensive principal or subordinate plant communities occurring on the earth, and imparting to the landscapes entirely different physiognomies. Nor is it easy to estimate the true significance of floristic distinctions'.

Well, those things we may leave to the learned. We at least may observe and record, as far as we have opportunity, on some of the lines above indicated. It remains to comment briefly on three observed facts in my own experience, each of which has some œcologic significance:

(1) There was a certain area in Brigg, which at intervals became flooded, and was turned into a large pond. The cause was simple. A narrow drain that ran through the field had a very small outlet, and in times of continuous heavy rain became choked up. Once there, the water would on occasion stop for a couple of years, and the vegetation in the second year showed a great variety of water-plants. Some of them, naturally, were those species which previously grew on the borders of the drain, but there were many others. Whence came they? I suppose that most, if not all, of them were from seeds carried by water-fowl.

(2) Another interesting little fact was the appearance in my garden at Brigg of a seedling Lime. This is, I believe, a rarity in our northern climate, and unfortunately I am not able to say what were the climatic conditions of the year before the seedling appeared, but I should infer that they must have been unusually favourable to the ripening of the seeds. We have seen this last damp summer the result of that sunny season of 1921 in the abundant display of flower and fruit on every tree and bush, and even on clipped hedgerow. The Limetree aforesaid is flourishing. It migrated with me to Hagworthingham, and it will accompany me to the smoky

atmosphere of manufacturing Stockport, where I hope it will be equally at home, and adapt itself to its surroundings.

(3) A third fact, and the most interesting of all, was the discovery of the Bilberry growing at Broughton by Brigg, which may very likely have been its habitat for time out of mind. There is, of course, the possibility that some one, fifty years or a century ago, brought it from outside, and planted it in a habitat where it was likely to make itself at home. On the other hand, the environment of the Ancholme valley is a likely one for its home. Other plants which are commensals of the Bilberry are found there. The comparative rarity of them and of it is due doubtless to the hand of man, and particularly of the Dutchman who drained the valley, and made it more serviceable to mankind.

We are accustomed to associate the Bilberry, as also the Cranberry and the Ling, with high altitudes. But, as we know, this is not always the case; and I myself think that the Bilberry in Lincolnshire is a survival, and that drainage and constant cropping by sheep and rabbits have reduced it to its present diminutive range of about ten to twelve square yards. The amazing thing about it is that it was left for a prowling semi-country parson to have the luck of finding it in the second decade, or was it the first, of the twentieth century.

These three things illustrate in a simple way the action (a) of water and waterfowl; (2) of the climate; and (3) of man and animals, in encouraging or retarding the growth of plants.

I hope to become a better botanist in the future, by snatching an occasional breathing space from my town work, and by making myself acquainted with the plant-lore of my native county. But I shall always have an affection for Lincolnshire. If I cannot attend your field meetings, I will at least continue my connection with your Union, and if the annual meeting happens at any time to be, as it is this year, in happy conjunction with my preaching turn at the Cathedral, I will endeavour to be there, to meet old friends and acquaintances, with whom I have spent many happy hours.

# REPORT OF THE HON. SECRETARY, 1922.

I beg to report that during the year the membership has been maintained, and that the Field Meetings have been fairly attended, considering the lack of facilities for travelling in our immense county.

The One-Hundred-and-Ninth Meeting was held at Well Vale on the 8th June. The chalk pit on the Spilsby Road was visited, and an interesting flora was examined. After entering the Vale, the party proceeded towards the Hall, many specimens being taken.

The One-Hundred-and-Tenth Meeting was held at Claxby Wood on the 5th July. This was a most interesting meeting in an area that always repays careful investigation. Many botanical notes were made, and specimens of *Lathyrus Aphaca* were observed growing luxuriantly. The Rev. J. N. Lee and Mrs. Lee very kindly entertained the members to tea.

The One-Hundred-and-Eleventh Meeting was held at Bourne on the 15th August. It was organized by Mr. A. E. K. Wherry, O.B.E., who met the party with motor-cars lent and driven by friends. Bourne Woods were visited, and the ground proved to be very interesting, among the plants that were noticed being some fine examples of the Wood Spurge (*Euphorbia amygdaloides*). The journey was continued through Scottlethorpe Gap, and thence to Grimsthorpe Park. Mr. and Mrs. Wherry entertained the members to tea, and afterwards conducted them to the Well Head, the Castle site, and the interesting Church.

Our thanks are accorded to all friends who helped to make these meetings so enjoyable and successful.

It is with sincere grief that I refer to the great loss the Union has sustained by the death of our most indefatigable worker, the Rev. E. Adrian Woodruffe-Peacock. No one can replace him as our mentor, and he leaves an example of diligent research into the fauna and flora of our county that every member may try to imitate.

I regret that removal from the county deprives the Union of the services of Mr. W. S. Medlicott, Mr. Tom Woodruffe-Peacock, and the Rev. Canon Claye.

ARTHUR SMITH.

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# SECTIONAL OFFICERS' REPORTS, 1922.

## CONCHOLOGY.

J. F. Musham, F.E.S., President.

Interest in this section has again been maintained. In the course of our rambles we detected *Helicigona arbustorum*, var. *cincta*, a new divisional record of the species for Scottlethorpe Gap (16 N). The same area yielded *Helicella itala*, vars. *obscura* and *lutescens*, which are also new as varieties to the same division.

Early in the year, Mr. A. H. G. Alston forwarded some dead shells found the previous December in Teapot Lane, Dalderby, amongst which were *Helicigona lapicida*, with its var. *albina*; *Carychium minimum* and *Pupa muscorum*, all new records for Div. 10 N.

A belated diagnosis of *Limnea peregra*, var. *costellata*, now in the collection of Mr. J. W. Taylor, reached me on the 14th February. I had obtained it in November 1905 in the Ballast Pit, Boultham, Lincoln, and it proves to be a further scarce variant of this very species for Div. 13 W.

*Pisidium casertanum*, apparently vars. *humeriformis* and *ponderosa*, may now be added to the County List; they are from Div. 13 W, whilst *P. milium* and *P. hibernicum* are new divisional records for the same area, collected by me in the River Witham, North Hykeham, 11 April 1908, and recently verified by Mr. A. W. Stilfox. These little river shells are especially interesting, and will repay the attention of resident members.

## ENTOMOLOGY: LEPIDOPTERA.

H. C. Bee and A. E. Musgrave.

Despite the damp summer, several good records have come to hand. The Clouded Yellow (*Colias edusa*) has been reported from five localities:

Tumby (Spring, 1922), Rev. F. S. Alston.
Linwood (third week of August), Mr. T. Ripon.
Cherry Willingham (August 20), Mr. T. Ripon.
Louth (September), Mr. R. W. Goulding.
Saltersford (September), Miss Stow.

Undoubtedly, this has been a 'Clouded Yellow' year.

Mr. H. Preston, through Miss Stow, records the Speckled Wood (*Pararge egerides*) in September at Twyford Forest, near Colsterworth.

Last year's Transactions (page 154) made reference to the capture of a Comma (*Polygonia c-album*) by Mr. H. Morris in June 1920, but it was not then recorded that the place where this exceedingly rare insect was taken was in the Sleaford district.

The following is a selection of the more interesting moths recorded during the year:—

Scarce Vapourer *(Orgyia gonostigma)*. Market Rasen, July (Mr. Dickenson, of Nottingham).

Small Elephant Hawk *(Chaerocampa porcellus)*. Linwood, 3 June (H. C. Bee).

Broad-bordered Bee Hawk (*Hemaris bombyliformis*). Linwood, 3 June (H. C. Bee); Tumby, Roughton and Stainton, during the spring (Rev. F. S. Alston).

Oak Hooktip *(Drepana binaria)*. Doddington, June (A. E. Musgrave).

Clouded Magpie *(Abraxas sylvata)*. Newton, 5 June (H. C. Bee); Claxby, 5 July (A. Smith); Usselby (Rev. F. S. Alston).

The Rev. F. S. Alston's Spring List includes:—Ingrailed Clay *(Noctua festiva)*, Tumby; Beautiful Yellow Underwing *(Anata myrtilli)*, Scrivelsby; Silver Cloud *(Xylomyges conspicillaris)*, Stainton; Oak Hooktip *(Drepana binaria)*, Woodhall

Spa; May Highflyer (*Hypsipetes trifasciata*), Tumby; Muslin (*Spilosoma mendica*), Lincoln and Tumby; Mullein (*Cucullia verbasci*), Scrivelsby; Clouded-bordered Brindle (*Xylophasia rurea*), Scrivelsby; Mottled Grey (*Larentia multistrigaria*), Stainton.

The following larvae are worth putting on record;—

Small Eggar (*Eriogaster lanestris*), on sloe, Thurlby, 5 June (A. E. Musgrave).

Broad-bordered Bee Hawk (*Hemaris bombyliformis*) on honeysuckle, Linwood, 22 July (A. E. Musgrave).

Emperor (*Saturnia carpini*), on heather, Linwood, 16 August (A. E. Musgrave).

Scarlet Tiger (*Callimorpha dominula*), on grasses, Linwood, 16 August (A. E. Musgrave).

## BIRD NOTES, AUTUMN, 1922.

G. H. Caton Haigh, M.B.O.U., F.Z.S.

The past migration season has been an extremely interesting one, as though no great 'rush' of birds took place, there was an almost continual influx of migrants for the whole autumn. The first movement began on September 2nd with a few Redstarts, Pied Flycatchers and Whitethroats. On the 4th, a few Wheatears, and one Icterine Warbler, the latter a new bird to the County List. On the 5th, the passage was much stronger, with a considerable number of Redstarts, Pied Flycatchers and Wheatears, and one Lesser Whitethroat. This movement lasted till the 9th, when it came to an end.

A few Peewits passed on the 11th and 12th, and some Wigeon on the 18th, while a single young Red-backed Shrike turned up on the 13th. Pink-footed Geese appeared on the 16th.

A fresh movement started on the 26th. It was composed chiefly of Robins and Redstarts, with a few Ring Ouzels, Chiffchaffs, Pied Flycatchers, and Wigeon. This movement lasted till the 30th, being strongest on the 28th, when a Yellow-browed Warbler occurred, and a flock of White-fronted Geese was seen.

There was little migration between September 30th and October 5th, but on the latter date a movement commenced which proved to be the strongest of the season. This 'rush' was chiefly composed of Redwings which appeared in thousands, with Robins, various Finches, Grey Crows, Woodcock, Peewit, and Jack Snipes. Among the Finches, Bramblings and Tree Sparrows were the most numerous. Ring Ouzels, Starlings and Rock Pipits were also travelling.

On October 15th, in addition to the birds already mentioned, Goldcrests, Blackbirds and a few Fieldfares appeared; also several Peregrine Falcons and a few Merlins were seen. Redwings continued to travel in immense numbers, and Robins were abundant in the coast district.

On October 15th, an unusual passage of Wild Geese took place, and attracted much attention. On that day, between 11 o'clock and 2, at least 2000 Geese passed over Grainsby. They were also reported in great numbers over Grimsby, Scarthoe, Binbrook, North Cotes and Alford. They were travelling in a south-easterly direction, and at a great height. Several flocks of White-fronted Geese were seen at Tetney and North Cotes, and three or four were shot. This 'rush' lasted with little intermission till the 23rd, on which date the second Lincolnshire example of the Red-breasted Fly-catcher was obtained.

On November 5th, 6th and 7th, a considerable arrival of Wild Swans took place. Most of the flocks were travelling to north-west, but one on the 6th, numbering about twenty birds, was going south.

At the same time there was a great passage of Rooks and Peewits, the latter birds coming in by thousands on the 8th and 9th, and continuing to pass in great numbers until the 22nd.

The most notable feature of the migratory season was the almost unprecedented number of Redwings arriving on the coast; also the appearance of such rarities as the Icterine Warbler, Yellow-browed Warbler, and Red-breasted Fly-catcher.

## OTHER RECORDS OF BIRDS.

Bittern. One shot at Spalding, 7 December 1921 (A. K. Maples).

Curlew. About 50 on Coleby Fen, August 1922 (C. Street).

Black-throated Diver. One shot on the Claypits, Horncastle, 6 February 1922 (Stafford Walter).

White-fronted Goose. One shot at Coleby, February 1922 (C. Trafford).

Fulmer Petrel One shot at Boston (A. Smith).

Cormorant. One on the spire of St. Swithin's, 19 October 1922, remained for five hours in the morning; returned on the morning of the 21st, and remained two hours (A. Smith).

## BOTANY.

Miss S. C. Stow.

Several interesting plants have been found this season:

*Lathyrus Nissolia* appeared as a casual in Dr. Willoughby Smith's garden at Gainsborough.

*Lathyrus Aphaca* was gathered by Miss D. Marsden in a field at Hallington, near Louth. It was also found at the Claxby Wood meeting on the 5th July.

*Sisymbrium Irio* (London Rocket) appeared on the site of Harrowby Camp; as also did *Rumex pulcher* (the Fiddle Dock), and *Matricaria discoidea* (Rayless Feverfew), a native of North America.

*Solanum nigrum* (Black Nightshade) has been particularly abundant this season near Grantham. A patch of Lucerne was so infested by this plant that the crop could not be given to horses for fear of dangerous consequences.

No new records were made at the Bourne meeting in August, but *Euphorbia amygdaloides* (Wood Spurge) was abundant in Bourne Wood, its only Lincolnshire habitat. Three other poisonous plants were also noted, namely *Solanum nigrum*, *Atropa Belladonna* and *Hyoscyamus niger*.

No Mosses of note have come to hand, but several interesting additions have been made to the Plant-Gall Register.

## GEOLOGY.

HENRY PRESTON, F.G.S.

### The Glaciation of Lincolnshire Limestone.

There is a considerable amount of evidence in Lincolnshire relating to the Glacial Period. Boulder Clays cover a very large area of the County, and these contain many rocks and fossils quite strange to the immediate districts in which they occur.

In the vicinity of Grantham it is seldom that a good section of the Boulder Clay is exposed, but whenever this happens, the clay is seen to be crowded with chalk pebbles, varying much in size from fragments less than a small pea to blocks eight or ten inches through, all ground into pebbles and boulders, and all more or less scratched and striated. The size and condition of these chalk boulders vary considerably, in proportion as the distance from their home in the Chalk Wolds in the north of the County increases. As the distance increases, all the blocks become less angular, whilst the ground-up lime of the chalk is seen to be more intermixed with the clay.

It is not a very difficult matter to find opportunities within the County for studying the evidences of this most interesting age, but when we seek to find direct evidence of the glaciation of Lincolnshire rocks in situ, it is a much more difficult problem, and it was with considerable interest that I learned, a short time ago, that a well was being sunk for water in Twyford Forest, a short distance east of Colsterworth, and about ten miles south of Grantham. Accordingly, I visited the works, and found that the Boulder Clay was 44 feet thick, and that it rested directly on the upper surface of the Lincolnshire Limestone. The clay was of the usual type in the neighbourhood, fairly full of striated chalk boulders, and these reached to within less than an inch of the Limestone surface. From this it was evident that the Boulder Clay had absorbed all the Upper Estuarines and other rocks lying above the Limestone, before reaching the spot which we were studying. When the Lincolnshire Limestone was reached, the men burst

off for me some pieces of the top surface, leaving some of the clay still attached to it. At our Annual Meeting I exhibited two of those pieces. One had the clay still in contact with it. From the other the clay had been removed, and thus the condition of the surface when cleaned up was shown. The clay immediately in contact with the Limestone was iron-stained, and of a light grey colour for about half-an-inch in thickness, this being caused by the amount of Limestone ground up with the under-surface of slowly moving clay, and it then blends with the darker clay above. The other specimen showed the upper surface of the rock to be grooved and striated very considerably. Over-lying it, as if it were protecting the striated surface, was a thin film of iron-stained calcareous tufa, which seemed to indicate that some slight amount of water action had taken place between the two surfaces.

This was the first time I had had an opportunity of examining Lincolnshire Limestone under such conditions, and extremely interesting it was to think how immense must have been the accumulations of ice which had spread over the whole country northwards, and which by their weight had pressed down the great sheets of glacial material during the later stages of the Great Ice Age. How strange too it was to reflect that I was examining effects which had been produced by creeping masses of Boulder Clay millions of years ago, and that those effects in that district were then for the first time visible to the human eye!

At a subsequent visit to the Well I was able to take the exact lie of striæ on the Limestone by means of a compass. The striæ here run from two degrees West of North to two degrees East of South.

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'The World Story of 3,000,000 ? Years'.—This publication is of especial interest to members of the L.N.U., as it has been written by one of our old fellow-workers, Mr. J. Reeves. There are six 'Charts', setting forth the history of the World in sequence, astronomical, geological and human. It is a concise account of the development of the earth's history arranged on a 'space for time' basis, on lines now generally accepted by scientists, and in a popular style. For Schools, Museums (both public and private), as well as for use by the general public, this book may be commended. It is all the more valuable because of its helpful references to the best books in which further information may be obtained. It is published by P. S. King & Son, London, and its price is 2s. 6d. net.

A. S.

# The Presidents
OF THE
# Lincolnshire Naturalists' Union.

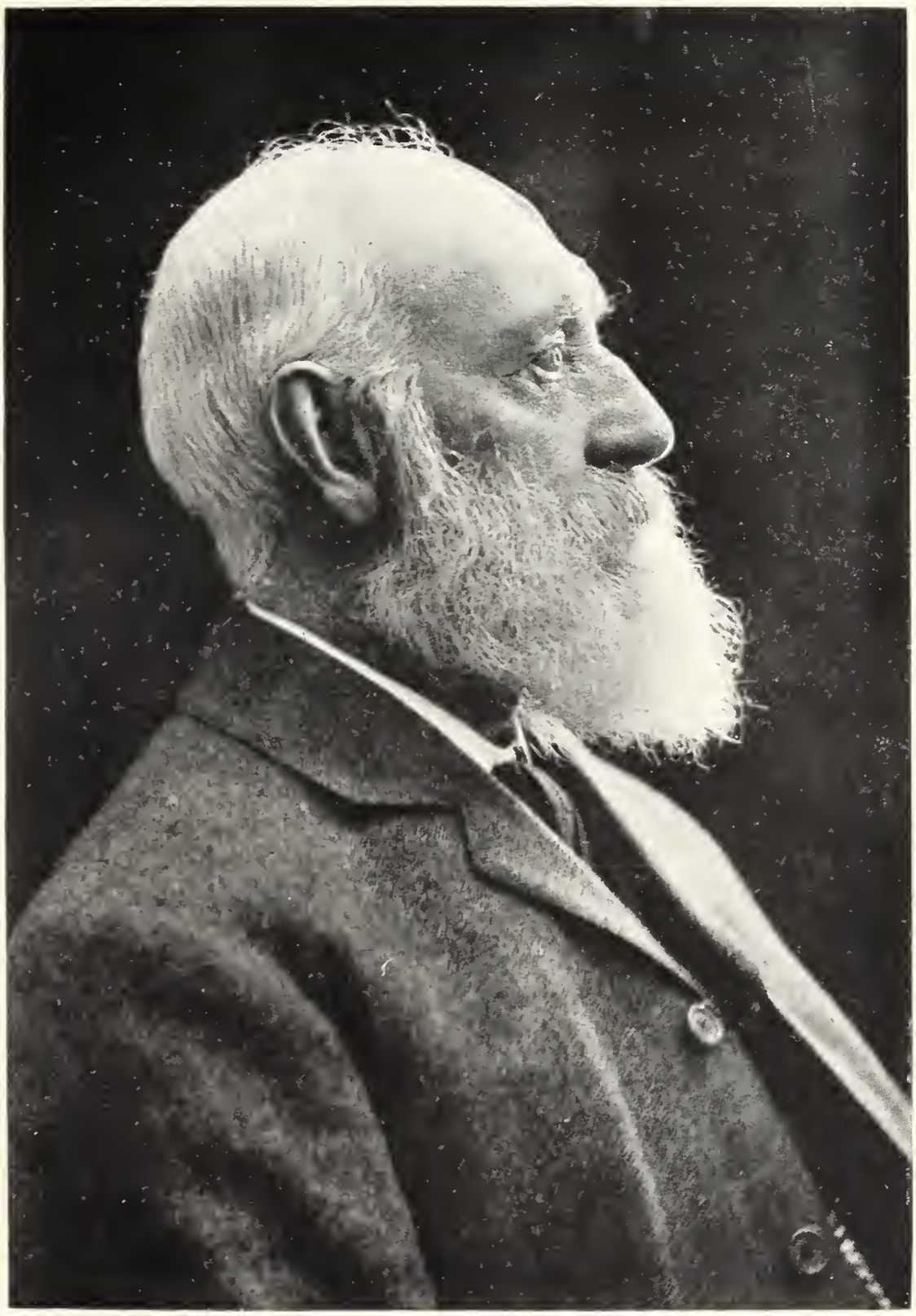
## THOMAS STOW.

MR. Thomas Stow, of Grantham, who was our President in the year 1919, is a Field Naturalist of a very useful type. His knowledge of nature has been gained not by the study of erudite manuals, but by careful and long-continued personal observations of animals and plants in their native habitats.

Born at Waltham-on-the-Wolds, in Leicestershire, in 1842, he was educated at the Grammar School of Grantham, so that his association with our county began very early in his life. Not only has he exceeded what we call the 'allotted span' by ten years, but in his ninth decade he still takes a keen interest in all things appertaining to natural history. By avocation a farmer, and always a keen sportsman and a good shot, his outdoor life and occupation gave him many opportunities of observing and understanding natural phenomena that frequently escape the notice of less active men. His great fund of anecdote and his wonderful memory were successfully drawn upon in the very interesting Presidential Address which he delivered at the close of his year of office.

Joining the L.N.U. in 1896, he speedily became one of our most active members, and he has been one of the most regular attenders of our field meetings. He was a man after the heart of the late Mr. Woodruffe Peacock (whose death we all sincerely deplore), and the two became close friends. The enthusiasm of Mr. Peacock communicated itself to Mr. Stow, and stimulated him to pay particular attention to some branches of nature-study in which he had previously taken only a general interest.

With the practical side of Botany Mr. Stow is thoroughly conversant, for he made its study and careful observation an



THOMAS STOW,

PRESIDENT, 1919.

BRITISH
MUSEUM
19 MAR 24
NATURAL
HISTORY.

essential part of his agricultural profession. The combination in his case at least, was a good one, for not only did his occupation afford him constant pleasure, but it enabled him to retire from its practice in the year 1904.

In that year Mr. Stow settled at Grantham, where he became an intimate friend of the late Mr. John Hawkins, who was for long the doyen of Lincolnshire conchologists. This intimacy soon awakened in Mr. Stow an interest in what was to him a new department of study, and he became an ardent conchologist. His researches added several species to the recorded list of Land and Freshwater Mollusca of the County.

Always an ardent Microscopist, especially for 'pond-life', he still retains his interest in this study and is never so happy as when searching the ponds and canals around Grantham for their minute forms of life.

Mr. Stow also took up the practice of Photography at a very early date and made it subservient to his other natural history studies, especially Microscopy: and whether the camera or the microscope—his two fondest loves—will prove the longest survival of his active interests, we cannot tell, but we all trust there are still some good active years to be added to his useful life.

H. P.

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'The Microscope', by Conrad Beck.—This is a small, inexpensive, well-written and well-illustrated book on that instrument that is so necessary for the scientific worker. As a guide to the correct use of the Microscope, it lacks nothing. Commencing with an exhaustive description of the instrument, it proceeds to deal thoroughly with illumination, and the apparatus needed for the best results, and gives a full description of the apparatus for holding specimens and of the method of mounting specimens and preparing slides. Photomicrography is given a generous space. Object glasses and eyepieces have a chapter to themselves, and another chapter is devoted to the stand with all its complicated mechanism for the successful manipulation of the finest instruments. In a final chapter a few well-selected examples of microscopic life are described. The book is a distinct contribution to the subject of microscopy. The price is 2s. 6d., and the publishers are R. & J. Beck, Ltd., 68 Cornhill, London.

A. S.

## THE GREEN SANDPIPER.

By the late Rev. E. A. Woodruffe-Peacock.

Between 1894 and 1897 the Green Sandpiper (*Totanus ochropus*, L.) frequented Kettleby and Aylesby Becks in North Lincolnshire. On each Beck a pair arrived in March; a single bird only was seen in April; in May a pair; in June a pair with four young. Both old and young were very shy, but the late John Cordeaux traced his birds to the Ash Wood north of the little bog by Aylesby Beck, and I traced mine to the Barf Wood in Howsham which lies by the Beck. Though we were morally certain that this species was breeding in Great Cotes and Cadney-cum-Howsham, we each failed to find any abandoned nests in our woods. John Cordeaux went to the trouble of having boys climb to every old crow's-nest in his Ash Wood, but the search was fruitless. I was with him in the month of May when we found one bird on the Beck, but our efforts to trace it to its home nesting tree were a failure. When Mr. Blathwayt was preparing his List of Lincolnshire Birds for the *Transactions* of 1915, I could only say to him: 'Its nesting here is not proved to demonstration'. It now has been, for on the 24th April 1921, my son Tom saw a snipe-like bird leave a nest in a tree in the garden of a cottage by a beck at West Rasen. That house had been almost unoccupied since the 20th of the preceding December, its occupier, Mrs. M. Maddison, having been in residence there for only one fortnight. She too had seen the snipe-like bird visit the tree, as also had Mr. David Bett to whom she let the garden. My son visited the place again on May 3rd, and found four young Green Sandpipers in the nest, which he believes to be the old nest of a Song Thrush.

BRITISH MUSEUM
19 MAR 24
NATURAL HISTORY.